New and Emerging Areas in Medicine Series

Quality Improvement and Patient Safety Competencies Across the Learning Continuum

VERSION 2

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Version 2

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Contents

Preface

Health care is changing rapidly. New technologies, advances in care delivery, and scientific discoveries are happening at rates that make it challenging for teaching and learning practices across the continuum to keep up. Whether learners are at the beginning of their career or seasoned clinicians, new demands and advances in health care require them to acquire new competencies. The AAMC New and Emerging Areas in Medicine Series is a guide for everyone who develops curricula within the field of medicine and for people learning to practice or continuing their professional development.

Each set of new and emerging competencies is developed by leaders from across the medical education and clinical practice communities, including the dedicated reviewers of iterative drafts who provided input through surveys and focus groups. These competencies add depth to selected emerging areas to help guide curricular and professional development, formative performance assessment, cross-continuum collaborations, and, ultimately, improvements in health care services and outcomes. They are not intended for high-stakes assessment or for purposes of accreditation. This series also includes the new and emerging areas, telehealth and diversity, equity, and inclusion.

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Acknowledgments

We acknowledge the outstanding contributions and expertise of the individuals and contributing authors listed below, who were involved in the revision of the AAMC quality improvement and patient safety competencies. This work would not have been possible without their time, engagement, collaboration, and commitment to advancing and amplifying the initial work done to develop the competencies. We also extend our sincere appreciation to the multiple constituents, including faculty, administrators, resident and fellow physicians, affiliate and health system leaders, patient advocates, and partners, whose thoughtful perspectives have helped to further our work.

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Series Introduction

Competency-Based Education

Competency-based education (CBE) is a developing approach to health professions education. The AAMC has a long history with CBE and defining the fundamentals for practicing in an increasingly complex health care system. Over the past 20 years, medical education has improved in many ways, including in how outcomes such as competencies are defined and used to guide teaching and learning. To support this positive change, we are offering the New and Emerging Areas in Medicine Series, which frames competencies across the undergraduate, graduate, and continuing medical education continuum.

This report includes an introduction to CBE and competencies in quality improvement and patient safety (QIPS), including the historical context and value of developing competence in this area. Additionally, the report provides strategies, tactics, curricular models, and assessment examples for integrating this essential educational focus across curricula and as a health system priority. Details regarding the development process and a glossary of terms are included as appendices.

Historical Context of Quality Improvement and Patient Safety Competencies

The initial version of the QIPS competencies was released in 2019 and provided a foundational resource for the implementation of quality improvement and patient safety education across multiple educational settings.[1] Not only did the initial competencies reflect the tremendous progress made in the field since the seminal U.S. Institute of Medicine report, *To Err Is Human: Building a Safer Health System,*[2] but they also reflected novel approaches to how one might acquire the necessary competencies throughout undergraduate, graduate, and postgraduate medical education to enable high-quality and safe, independent clinical practice.

But why should this work matter to us? Simply put, despite significant strides in quality improvement and patient safety, medical errors continue to be significant sources of morbidity and mortality,[3] and opportunities to pursue a safe learning and clinical practice culture remain.

In the years since the release of the initial competencies, much has happened in health care and medical education. We have had the benefit of perspective and experience from early work in competency development to guide our future directions; we have deepened our understanding of the importance of a competency-driven approach to meet learning health system workforce needs[4]; we have integrated this model of education to achieve improved patient care outcomes; and we have lived through an unprecedented global health experience that forever transformed the way in which we view, approach, and practice medicine.

Thus, the time was right to revisit, review, and refresh the initial QIPS competencies. Our goal remained the same as that for the previous version of the competencies: "… to add depth to key emerging areas to guide curricular and professional development, formative performance assessment, cross-continuum collaborations, and, ultimately, improvements in health care services and outcomes."[5] It is, however, our hope that through our intensive, collaborative, and iterative process of refreshing the initial competencies, we have not only built upon the foundation provided through the success of the first version, but have also been responsive to the dynamic and transformative evolution of health care and medical education that has taken place in recent years.

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Cross-Continuum Competencies: Quality Improvement and Patient Safety

Organization of the Competencies and Reasons for Updating Them

The updated QIPS competencies reflect a 12-month, iterative process of work operationalized through three key bodies:

- The QIPS Competency Subcommittee (the "QIPS subcommittee")

- The QIPS Advisory Committee (the "advisory committee")

- The Operational Team

The process is described in greater detail in Appendix A. The organization and structure of the revised competencies are similar to the initial version but include the following key changes:

1. The competencies reflect the current, best evidence.

2. Patients and caregivers are the core of the health care team.

3. Health equity is a common thread.

4. The developmental nature of the competencies is better represented.

To ensure that the updated competencies reflected the most current, available evidence across the core domains, we engaged the AAMC Reference Center to provide critical expertise and extensive literature searches:

- Extensive literature searches were completed across all existing and proposed domains, as well as related areas of health systems science.

- The data from the literature searches were incorporated across all key aspects of the workflows for updating the competencies.

We applied a grounding framework of patients and caregivers as the core of the health care team in alignment with evolving evidence of the value of this approach in maximizing health care outcomes, and to reflect the AAMC's mission of better health for all.

- Framing the competencies in this way also enabled us to align what were formerly Domains IV and V ("Patients and Families as QIPS Partners" and "Teamwork, Collaboration, and Coordination," respectively) into a single, new domain, "Patients, Caregivers, and Health Care Professionals as Partners in QIPS."

- The "Patients, Caregivers, and Health Care Professionals as Partners in QIPS" domain aligns two previously distinct domains to identify the knowledge, behaviors, and skills needed to effectively interact and

coordinate care within health care settings with a foundation of authenticity, respect, and mutual support. This domain frames patients and caregivers as the core of the health care team and aligns their collective goals of culturally responsive collaboration and shared decision-making in the pursuit of quality improvement and patient safety.

"Health Equity in QIPS" (previously Domain III in the 2019 version of *Quality Improvement and Patient Safety Competencies Across the Learning Continuum*[1]) was designated as a common, consistent thread through all competencies, as opposed to being a separate domain; this was done to acknowledge the commonality and importance of health equity and health care disparity across all the competency domains, as well as to promote alignment with the more recently published AAMC diversity, equity, and inclusion (DEI) competencies.[6] This also helps to reflect the intentional synergy in language between the QIPS and DEI competencies and their formats, as there are now three domains instead of five.

Organization of the emerging competencies was enhanced to better represent developmental progression. With the goal of aligning the language, interpretability, and application of the updated competencies across all stages of the medical education continuum, we intentionally used verbs consistently in each stage of competency development that reflect ascending taxonomy of knowledge acquisition:

- Stage 1: "describe," "identify," "consider," or "discuss"; focus on self, foundational knowledge, and essential framing competencies.

- Stage 2: "demonstrate" or "model"; focus on team, leadership, decision-making, and accountability.

- Stage 3: "coach," "lead," "mentor," "vision," "challenge," or "change"; focus on system, agency, change management, and enduring growth.

To better describe changes made to the original version, a relevant number is provided next to each competency in Tables 1-3 to reflect the rationale behind the update:

1. To reflect new evidence available in the published literature.

2. To offer additional context, clarity, specificity, or detail.

3. To better enable assessment.

4. To put more emphasis on collaborative, interprofessional practice.

5. To elevate the standards and expectations for learners, trainees, and faculty (due to greater attention to and improvements in QIPS education).

6. To enable flexibility and permit broader applicability in clinical practice and across the medical education continuum.

7. To reflect advances and evolution in health care.

8. To reflect greater alignment with cross-cutting skills or related competencies with other thematic areas (e.g., AAMC DEI and telemedicine competencies).

9. To reduce redundancy with other sets in the series.

10. To reflect new and emerging priorities and content.

11. No substantive changes were made to original competencies.

Intended Audience and Uses

The QIPS competencies serve to establish a common standard for learners, educators, providers, patients, and health systems that supports our collective goal of providing the safest and highest quality of care to patients, built on a foundation of trust and mutual respect. Through traversing the continuum of medical education, the competencies provide foundational education and training to those early in their QIPS journey and offer new directions and milestones for continued development in this domain.

As with others in this series, the QIPS competencies are not intended to be used for high-stakes assessment or accreditation of schools, programs, or institutions. They are instead intended to drive collaboration, excellence, and consistency in health care delivery. Other intended uses include:

- Enabling local care settings to tailor their approaches to their own educational and systemic needs.

- Engaging diverse health care professionals — including cross-continuum and cross-discipline colleagues — in collaborative discussions on improving patient safety.

- Conducting gap analyses of local curricula and training programs.

- Planning individual professional development.

- Developing curricular learning objectives and assessment tools.

- Advancing research and scholarship in medical education and quality improvement.

- Guiding the strategic integration of QIPS into the curricula and clinical learning environment.

- Responding to the emerging challenges and priorities that define QIPS education today.

Caveats and Limitations

To further clarify the design and use of these competencies, please note these important caveats and limitations:

- Important terms and phrases are defined in the glossary (Appendix B).

- The competencies are tiered according to level of practice: entry to residency education (Tier 1), entry to independent practice (Tier 2), and experienced faculty physician (Tier 3).

- Depending on local resources and environments, some may consider certain competencies aspirational, while others may be below expectation. Our goal was to balance both what is feasible and necessary to achieve safe and high-quality health care delivery, as understood through a patient, provider, or health system perspective.

- These domains are not mutually exclusive or exhaustive. Some competencies may align with more than one domain. The competencies are organized into the domains based on the consensus of the QIPS subcommittee and feedback from hundreds of stakeholders via focus groups and surveys (described below).

- In this updated version, we have integrated concepts related to health equity and health care disparity across the competencies. Competencies related to the previous "Health Equity in QIPS" domain are further addressed in the AAMC DEI competencies.[6]

- This work is informed by an extensive literature review to reflect the emerging nature of this topic.

Feedback on the Competencies

We plan to review and regularly update the competencies based on feedback from the community. We look forward to learning and hearing from you as you use these competencies in creative ways. Please contact QIPS@aamc.org to share feedback, resources, suggestions, and exemplars for teaching and learning.

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Domain I: Patients, Caregivers, and Health Care Professionals as Partners in QIPS

The "Patients, Caregivers, and Health Care Professionals as Partners in QIPS" domain aligns two previously distinct domains to identify the knowledge, behaviors, and skills needed to effectively interact and coordinate care within health care settings with a foundation of authenticity, respect, and mutual support. This domain frames patients and caregivers as the core of the health care team and aligns their collective goals of culturally responsive collaboration and shared decision-making in the pursuit of quality improvement and patient safety (Table 1).

Table 1. Domain I: Patients, Caregivers, and Health Care Professionals as Partners in QIPS

Tier 1: Entering Residency (Recent Medical School Graduate) or *Beginning QIPS Journey*	Tier 2: Entering Practice (Recent Residency Graduate) *Including Competencies in Tier 1* or *Advancing Along QIPS Journey*	Tier 3: Experienced Faculty Physician (3-5 Years Post-residency and Beyond) *Including Competencies in Tiers 1 and 2* or *Continuing and Leading in the QIPS Journey*	Rationale for Change
1a. Describes the model of patient and caregiver as core members of the health care team.	1b. Models culturally responsive and inclusive practice through intentional engagement of the patient and caregiver in health care practice.	1c. Challenges health care teams to identify missed opportunities for patient and caregiver engagement in the health care environment.	8, 9
2a. Describes and utilizes available resources and services to improve inclusive practice for all patients, including those with disabilities.	2b. Proactively uses resources and services to improve inclusive practice for all patients, including those with disabilities.	2c. Mentors health care professionals in the use of inclusive clinical practice, including advocacy for patients at risk for being marginalized in the health care system.	2, 5
3a. Identifies barriers to equitable access to health care, including systemic, social, and structural constructs that predispose individuals and populations to inequity.	3b. Acknowledges and mitigates social drivers of health inequities in clinical practice through active engagement of patients and caregivers.	3c. Discusses and proposes systems-based approaches to ameliorate and disrupt gaps in health care inequities through engagement with health system leaders and partners.	8, 9

(continued)

Table 1. Domain I: Patients, Caregivers, and Health Care Professionals as Partners in QIPS *(continued)*

Tier 1: Entering Residency (Recent Medical School Graduate) or *Beginning QIPS Journey*	Tier 2: Entering Practice (Recent Residency Graduate) *Including Competencies in Tier 1* or *Advancing Along QIPS Journey*	Tier 3: Experienced Faculty Physician (3-5 Years Post-residency and Beyond) *Including Competencies in Tiers 1 and 2* or *Continuing and Leading in the QIPS Journey*	Rationale for Change
4a. Participates collaboratively in patient safety and quality improvement educational programs with patients and caregivers.	4b. Partners with patients to develop patient safety and quality improvement educational programs focusing on how a patient's unique sociocultural attributes may impact their care perspective and experience.	4c. Applies outcomes from a collaborative patient or caregiver program or intervention to guide modifications in clinical practice and behavior among health care professionals in the local environment.	2, 9
5a. Participates in multisource feedback process to inform actionable goals, including feedback from patients/caregivers.	5b. Utilizes data from multiple sources (e.g., 360° assessments) to inform the development of actionable goals for clinical practice.	5c. Creates opportunities for professional development that engage patients/caregivers in the educational process.	5
6a. Defines foundational principles of shared decision-making and informed consent, and identifies barriers that may impede attainment of these goals.	6b. Models shared decision-making and informed consent through clinical practice, framing the patient/caregiver as the core of the health care team.	6c. Cultivates normative practices and behaviors to enable shared decision-making and responsible elicitation of informed consent, including knowledge of the standards necessary to ensure this in clinical practice for vulnerable, at-risk, and marginalized populations.	2, 5
7a. Describes the role of effective teamwork, including communication, collaboration, and cognition, to achieving desired health care outcomes.	7b. Identifies and redirects deviations in effective teamwork to enhance team effectiveness in the care environment, including recognition of patients as the core members of the health care team.	7c. Mentors and guides health care teams to reframe and update their practice to maximize team effectiveness, collaboration, and management of conflict, when needed.	2, 4
8a. Practices collaboratively across all health professions to ensure patient safety and continuous quality improvement.	8b. Identifies opportunities (including those missed) for interprofessional, collaborative clinical practice and guides health care teams in the development of workflows to enhance team effectiveness in the care environment.	8c. Guides and mentors health care teams in the provision of interprofessional, collaborative clinical care through intentional strategies and behaviors that support a collaborative working environment.	2, 4

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Domain II: Patient Safety

The "Patient Safety" domain delineates competencies that promote safe clinical practice, reduce the occurrence of preventable adverse events and medical errors, and emphasize the shared accountability of individuals and systems in providing safe, high-quality health care delivery (Table 2).

Table 2. Domain II: Patient Safety

Tier 1: Entering Residency (Recent Medical School Graduate) or *Beginning QIPS Journey*	Tier 2: Entering Practice (Recent Residency Graduate) *Including Competencies in Tier 1* or *Advancing Along QIPS Journey*	Tier 3: Experienced Faculty Physician (3-5 Years Post-residency and Beyond) *Including Competencies in Tiers 1 and 2* or *Continuing and Leading in the QIPS Journey*	Rationale for Change
9a. Describes the value of a culture of safety and identifies key elements that promote safe clinical practice in the working and learning environment, including recognition of system and human factors that impact patient safety outcomes.	9b. Makes decisions in support of a psychologically safe working and learning environment, and takes steps to respond to and prevent future system and human factor errors.	9c. Collaborates with clinical, educational, and health system leaders to proactively identify and mitigate system hazards/risks through engagement in longitudinal professional development and clinical activities appropriate to the working and learning environment.	2, 5
10a. Practices appropriate patient safety practices, including infection control, responses to safety alerts, and the reporting/follow up of personal injuries or exposures.	10b. Teaches effective patient safety practices, including infection control, responses to safety alerts, and the reporting/follow up of personal injuries or exposures.	10c. Identifies and mitigates risks to patient safety through callouts, challenges to status quo, and engagement of key stakeholders and decision-makers to advocate for change and improvement.	6, 7
11a. Collects key clinical findings needed to inform clinical practice and accurate diagnosis through patient-centered evaluation, and ensures timely, complete documentation in the patient record.[1]	11b. Demonstrates clinical reasoning that uses reflection, surveillance, critical thinking, consultation, collaboration, and responsiveness to feedback to inform diagnostic accuracy, with the ability to document this effectively in the patient record.[1]	11c. Facilitates open dialogue and behaviors among clinical team members to promote inclusivity, openness to feedback, and continuous learning through routine analysis and discussion of desirable and undesirable clinical outcomes, including best practices for system resource utilization.[1]	2, 3, 6
12a. Describes common types of human error — both active and latent — and the limits of human performance that impact patient safety outcomes, including knowledge of available resources for health (physical, mental, emotional, etc.), when needed.	12b. Demonstrates accountability for human performance/personal factors that impact safe clinical practice, including facilitation of clinical debriefs after patient safety events and acknowledgment of opportunities for self-improvement, where applicable.	12c. Proactively anticipates and identifies human elements that may increase risk in clinical practice and drives behavioral changes through role modeling and intentional practice modifications (e.g., evidence-based approaches to patient handoffs, critical event review).	2, 5

(continued)

Table 2. Domain II: Patient Safety *(continued)*

Tier 1: Entering Residency (Recent Medical School Graduate) or *Beginning QIPS Journey*	Tier 2: Entering Practice (Recent Residency Graduate) *Including Competencies in Tier 1* or *Advancing Along QIPS Journey*	Tier 3: Experienced Faculty Physician (3-5 Years Post-residency and Beyond) *Including Competencies in Tiers 1 and 2* or *Continuing and Leading in the QIPS Journey*	Rationale for Change
13a. Escalates safety concerns (including near misses and imminent patient safety threats) appropriately through designated systems and protocols.	13b. Applies outcomes of patient safety events to improve and enhance health care delivery through intentional and strategic changes in practice, as applicable.	13c. Identifies and incorporates discussion of common themes, trends, and opportunities in patient safety into routine clinical practice at the organization level, both with colleagues and learners.	1
14a. Describes the essential elements of root cause analysis or similar structured process for critical event review that enables the comprehensive review of an event resulting in an undesired or unexpected outcome, and the development of corrective actions to mitigate future risk.	14b. Participates actively in a root cause analysis or similar process, either through direct participation as a provider or through the preparation of a learner or trainee for participation in a critical event review.	14c. Coaches and supports a learner, trainee, or early faculty member in the preparation for a critical event review, and outlines an action plan (including metrics) in response to the outcomes of a critical event review.	1, 3
15a. Describes the essential elements of communicating about undesirable/ unexpected outcomes to patients and caregivers, including individual and shared accountability.[1]	15b. Demonstrates the disclosure of adverse outcomes to patients and caregivers, including collaboration with health system partners (e.g., caregiver and patient advocacy).	15c. Models and teaches effective communication of an adverse outcome to patients and caregivers, including partnership with key stakeholders to enhance opportunities for learner and trainee participation and patient-centeredness in the process. Communicates patient safety data, including unsafe conditions, events, and near misses, to individuals, teams, and across the organization to drive change and continuous quality improvement.	10

Domain III: Quality Improvement

The "Quality Improvement" (QI) domain defines systematic, ongoing practices that lead to measurable improvement in health care services and patient outcomes, foster a culture of continuous practice improvement, and ensure high-value care delivery (Table 3).

Table 3. Domain III: Quality Improvement

Tier 1: Entering Residency (Recent Medical School Graduate) or *Beginning QIPS Journey*	Tier 2: Entering Practice (Recent Residency Graduate) *Including Competencies in Tier 1* or *Advancing Along QIPS Journey*	Tier 3: Experienced Faculty Physician (3-5 Years Post-residency and Beyond) *Including Competencies in Tiers 1 and 2* or *Continuing and Leading in the QIPS Journey*	Rationale for Change
16a. Describes the terminology, methods, and value of QI to effective clinical practice.	16b. Applies foundational principles and frameworks for QI through routine discussions and activities in the learning and working environments.	16c. Cultivates an atmosphere of continuous practice improvement by incorporating QI into daily workflows and education.	2, 3
17a. Participates in ongoing QI initiatives in the local environment.	17b. Enhances knowledge of and engagement in QI through longitudinal participation in local QI activities and progressive leadership of such initiatives.	17c. Collaborates with clinical, educational, and health system leaders to implement or advance a QI initiative, in alignment with standards for ongoing maintenance of certification, as applicable.	11
18a. Distinguishes foundational QI tools (e.g., flow charts, process maps, fishbone diagrams) and QI measures (e.g., process, outcomes, balancing) to inform QI efforts.[1]	18b. Uses appropriate tools and measures in QI initiatives.[1]	18c. Mentors learners, trainees, and early faculty colleagues in the effective review of QI initiatives and application of outcomes to inform clinical practice.[1]	11
19a. Recognizes and articulates the importance of evidence-based guidelines and standards to guide clinical decision-making and practice.	19b. Leads interdisciplinary care delivery, coordination, and clinical practice through an evidence-based framework, with applications to transitions of care, clinical documentation, and education.	19c. Cultivates an environment of clinical practice that promotes and values dynamic inquiry, a shared drive for excellence, and respectful disagreement in the pursuit of best possible patient outcomes.	2, 5

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Table 3. Domain III: Quality Improvement *(continued)*

Tier 1: Entering Residency (Recent Medical School Graduate) or *Beginning QIPS Journey*	Tier 2: Entering Practice (Recent Residency Graduate) *Including Competencies in Tier 1* or *Advancing Along QIPS Journey*	Tier 3: Experienced Faculty Physician (3-5 Years Post-residency and Beyond) *Including Competencies in Tiers 1 and 2* or *Continuing and Leading in the QIPS Journey*	Rationale for Change
20a. Describes basic principles of health care delivery, organization, and financing, including private health insurance and federal health programs.[1]	20b. Utilizes practice data and informatics to guide behavior change in clinical practice and using a cost-informed approach to health care delivery.[1]	20c. Models cost-informed health care delivery to include strategies for controlling costs, resource allocation, and cost-benefit analysis through routine discussion with key stakeholders and learners/trainees.[1]	2, 5
21a. Articulates the ethical case for stewarding resources and cost-conscious care, including the potential impact of clinical decisions on whether the patient can afford the cost.	21b. Modifies clinical practice to incorporate responsible resource stewardship, waste mitigation, and adherence to recommended practice guidelines.	21c. Develops strategic interventions to improve resource stewardship, performance, and outcomes that deliver high-value and effective patient care.	5, 8, 9
22a. Describes ethical principles that govern QI, including confidentiality of patient information and the role of the institutional review board.	22b. Compares and contrasts the ethical principles that govern QI and those for research, including the role of the institutional review board.	22c. Ensures ethical oversight of QI through visible and accountable participation in surveillance activities and education necessary for ethical, human-subject research.	11
23a. Recognizes differences in quality measurement data between local and best practice to identify gaps and opportunities for improvement.	23b. Implements measurable changes based on gap analysis comparing local and best practices for quality.	23c. Mentors others in the development of research questions that promote organizational decision-making based on analysis of quality measures.	11
24a. Describes practice data metrics typically surveilled for clinical providers and knows how this data can be obtained and the factors that contribute to the gap(s) between expectation and actual performance.	24b. Analyzes individual practice data and, as a result, develops an action plan to address identified gaps.	24c. Reflects on a practice change due to data received and engages in longitudinal learning activities to inform continuous personal and practice improvement.	2, 5, 11

1. Adapted from the Accreditation Council for Graduate Medical Education (ACGME) Harmonized Milestones; ICS = Interpersonal Communication Skills; PS = Patient Safety; SBP = Systems-Based Practice. For details, see "Milestones 2.0: A Step Forward" by L. Edgar et al. (*J Grad Med Ed.* 2018;10[3]:367-369. doi:10.4300/JGME-D-18-00372.1).

Curricular Models for Integrating Quality Improvement and Patient Safety Into Medical Education

A Systems-Based Curriculum on Graduate Medical Education Quality Improvement and Patient Safety

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Literature on graduate medical education (GME) QIPS suggests that greater standardization of the teaching and learning process is needed during residency. In July 2017, our health system's GME, Patient Safety, and IT departments collaborated on a strategic plan to increase and better support resident involvement in QIPS projects. A systems-based curriculum was created and resourced to focus on education, faculty development, and recognition. First, a network-wide QIPS workshop series was created to educate residents monthly on such topics as QIPS principles, the "plan-do-check-act" cycle, social determinates of health, QIPS design and methods, QI teams, the REDCap data collection system, electronic medical record data extraction, etc. These hour-long workshops are offered in-person and virtually. Workshops are mandatory for interns and optional for more senior residents and QI faculty. Each resident in a multiyear program is required to complete a QIPS project to graduate. Second, residency directors appoint a QIPS faculty champion to help residents design projects and work on a multidisciplinary team. The faculty guides residents through the "plan-do-study-act" cycle, using the St. Luke's University Health Network's Annual Quality Awards recognition process as the template for demonstrating QIPS knowledge and skills. The GME office hosts quarterly faculty development sessions with QI faculty that leverage case-based methods to foster discussion, problem-solving, and collaboration among QI faculty. Third, upon project completion, there are numerous opportunities for residents to showcase QIPS project outcomes, including the network's Annual Quality Awards contest (for all employees), Research Day (for residents and fellows), and GME QIPS Symposium (for residents and fellows). The GME office also assists with project dissemination at local, regional, and national conferences. This educational activity aligns with many AAMC QIPS competencies, including Tiers 1-3 of Domain II, "Patient Safety," and Tiers 1-3 of Domain III, "Quality Improvement."

Interprofessional Teamwork in Health Care: Improving Education to Impact Patient Outcomes

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Developing physicians who embrace teamwork and interprofessional practice is critical to patient care and outcomes. Geisinger Commonwealth School of Medicine's Total Health Curriculum includes a longitudinal theme, personal and professional development (PPD), within the "Systems, Society, and Humanism in Medicine" core curriculum. A PPD curricular activity on interprofessional teamwork in health care is interwoven into the ambulatory (family) medicine clerkship. Throughout this clerkship, students complete an online learning assignment, which includes a pretest and posttest, module exercises, and a discussion board. At the end of the clerkship, they attend a virtual, synchronous, facilitated discussion supported by faculty facilitators. The discussion begins with an interactive presentation that builds upon the students' learning from the online module and includes an overview of teams, team-based care, interprofessional education, and interprofessional collaboration. We also discuss principles of team-based care, benefits of teamwork, barriers to teamwork, and practical tips to support team function. Two clinical scenarios are presented to the students, who join breakout rooms with faculty for an active-learning, case-based discussion; each small group then reports a summary of their discussion during a large-group debriefing. This curricular activity allows students to simultaneously learn, practice, and reflect on how groups of people work together to care for patients and improve outcomes. PPD faculty review pre- and posttest responses, discussion board entries, and participation in the facilitated discussion, and provide formative feedback. The theme session is included in the ambulatory medicine clerkship evaluation and course report, which is presented to the curriculum committee annually. This educational activity aligns with AAMC QIPS competencies 1, 7, and 8 of Domain I, "Patients, Caregivers, and Health Care Professionals as Partners in QIPS."

Expanding Training in Quality Improvement and Patient Safety Through a Multispecialty Graduate Medical Education Curriculum Designed for Fellows

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In 2017, the University of Colorado implemented the Quality & Safety Academy to help fellows develop competency in QIPS. In this curriculum, fellows from 44 different disciplines participate together in three seminars: "Foundations in Patient Safety: Performing a Case Review," "Quality Improvement: Turning Adverse Events Into Local Change," and "Quality in Academics: Strategies to Drive Sustainability and Dissemination." This centralized approach of bringing together fellows from multiple programs provides important QIPS training required by the Accreditation Council for Graduate Medical Education, while maximizing faculty expertise and time. Using this strategy, an institution can leverage limited faculty expertise in QIPS to impact multiple groups of learners simultaneously. In the academy, fellows collaborate in both large and small groups to discuss and analyze adverse events they have witnessed, develop QI projects, implement change management strategies, and identify opportunities for dissemination of QI work. The final seminar emphasizes the development of QIPS-related leadership and scholarship. The curriculum has been effective in meeting its goals and objectives, demonstrating improvement in knowledge, skills, and attitudes among fellows and across QIPS domains. The full curriculum is available on the _MedEdPORTAL_ website. This educational activity aligns with AAMC QIPS competencies of Domain II, "Patient Safety," and Domain III, "Quality Improvement."

Identifying and Analyzing Systems Failures: An Interactive, Experiential Learning Approach to Quality Improvement for Clerkship-Level Medical Students

Harvard Medical School, Boston

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Medical students have direct experience with patient safety events and witness firsthand opportunities to improve the quality of health care. It is important to not only teach them the core concepts in quality and safety, but to also give them the opportunity to apply what they have learned in the clinical setting. In 2019, Harvard Medical School implemented a curriculum for clerkship students that targets the AAMC Core Entrustable Professional Activity 13, "Identify system failures and contribute to a culture of safety and improvement." The curriculum occurs over two hour-long sessions with independent work occurring between them. In the first session, students analyze a patient safety event and perform a root-cause analysis using the Institute for Healthcare Improvement's 5 Whys tool worksheet. In the month between sessions, students investigate system failures identified through their clinical rotations and submit written reflections on the process. When they return for the second session, they debrief about their experiences. This curriculum reinforces that medical students can be change agents, both as students and in their future careers. This curriculum has been effective in improving students' knowledge and skills in quality improvement and patient safety. The full curriculum is available on the _MedEdPORTAL_ website. This educational activity aligns with AAMC QIPS competencies of Domain II, "Patient Safety."

"The Safety Dance": A Faculty Development Workshop Partnering IPE and Patient Safety Initiatives Using Simulation-Based Education

NYU Grossman School of Medicine, New York City

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Effectively addressing patient safety requires interprofessional collaboration. Developing this collaboration often requires deliberate efforts in interprofessional education (IPE). Recognizing this, faculty and staff from NYU Grossman School of Medicine implemented an interprofessional workshop that was delivered at regional and international conferences to a diverse group of people representing a variety of roles, including physicians, nurses, and administrators. In this workshop, participants worked together to develop for faculty and staff a hypothetical patient safety training that simulated an emergency department with an agitated patient. Workshop participants were assigned different roles (i.e., nurse manager, attending physician, director of security, and patient safety administrator) and were provided with relevant background information to enhance the fidelity of the interprofessional interactions. The full curriculum is available on the *MedEdPORTAL* website. This educational activity aligns with AAMC QIPS competencies of Domain I, "Patients, Caregivers, and Health Care Professionals as Partners in QIPS," and Domain II, "Patient Safety."

Jump-Starting Faculty Development in Quality Improvement and Patient Safety Education: A Team-Based Approach

University of California, San Francisco, School of Medicine

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At many institutions, there is a shortage of faculty who have training in QIPS. Despite this challenge, there is a growing need for faculty educators to provide training for medical students and residents. Recognizing this, the University of California, San Francisco, School of Medicine created a local curriculum based on a national program to reach more faculty at their institution. They adapted the AAMC's Teaching for Quality program into a locally delivered, team-based program. In this program, faculty participated in a workshop then worked in teams on projects over the subsequent year with periodic, work-in-progress sessions. They strategically identified and invited clinical faculty and educational leaders to participate in this training, based on the priority areas for faculty development in quality and safety. These faculty worked together in groups on five different projects: online modules for faculty new to QIPS, a tool kit for GME programs, a module for clerkship directors, guidelines for clinical faculty to integrate early learners into QI projects, and a certification program for teaching QIPS. The products from these group efforts have now reached countless faculty, residents, and students. For more information, the full publication is available online. This educational activity aligns with AAMC QIPS competencies of Domain I, "Patients, Caregivers, and Health Care Professionals as Partners in QIPS;" Domain II, "Patient Safety;" and Domain III, "Quality Improvement."

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Appendix A. Development Process

Our development process for the QIPS competencies "refresh" was iterative with a goal of refining the existing competencies to enhance their relevance and application across the continuum of medical education and various health care settings. This multiphase process took place over a period of 12 months, led by the AAMC staff, the QIPS advisory committee, the QIPS subcommittee, and the operational team, who convened to drive the work and process.

Convene the Team

The **advisory committee** was comprised of individuals who had previously contributed to the development of the initial QIPS competencies and were now serving as subject matter experts and reviewers for the competency renewal project, in collaboration with subcommittee members and AAMC staff. Advisory committee members were engaged through a comprehensive survey for which feedback was sought on the initial competencies and possible new opportunities for the following version. The advisory committee met three times over the course of the content development process to assess progress, provide input on the framework and approach, and propose edits to the updated competencies, all with the goal of aligning with the AAMC's strategic priorities that foster high-quality care delivery, research, educational and community collaboration, transformation, and innovation.

The **QIPS subcommittee** was comprised of a multidisciplinary team of subject matter experts who served as primary reviewers, authors, and editors for the QIPS competencies updates. The charge of the QIPS subcommittee was to lead the renewal of the existing AAMC QIPS competencies. Members of this committee included academic and health system leaders, trainees, students, and faculty representing a range of professions, specialties, roles, and disciplines. Members were selected through a rigorous process that evaluated their expertise in the QIPS field and the diversity of their experiences and perspectives.

Over the course of 12 months, this group undertook an iterative, intensive review of the original competencies, framed by the following question and key drivers for updating the competencies:

How do we respond to the broad evolution in education, health care quality, and patient safety?

- Desire to maintain sustained relevance and excellence in competency-based education across core focus areas included in the QIPS competencies.

- Commitment to inclusion excellence and the necessary evolution in our work to ensure alignment across this priority.

- Interest in enhancing the relatability and applicability of the competencies while considering transformative societal events, such as the COVID-19 pandemic.

· Recognition of the fact that QIPS looks different than in the past; the goal to refine the foundational work to reflect new and emerging priorities in this domain.

· Opportunity to embrace innovation and experiential journeys in this domain to enhance thought, dialogue, and action.

Key activities of the team included completion of a comprehensive survey assessing the initial QIPS competencies, extensive literature searches in collaboration with the AAMC Reference Center, direct review and revision of the previous content, and the development of new content. The operational team consisted of key AAMC staff and the QIPS subcommittee chair, who together provided the operational leadership and support for the advisory committee, QIPS subcommittee, and the overall QIPS competencies renewal process. The team met weekly for several months, both prior to and following the commencement of the renewal project, to ensure excellence, quality, and the operational efficiency of the process.

Reflection and Strategy

During this phase of the process, both the advisory committee and QIPS subcommittee spent substantial time reviewing the first version of the QIPS competencies to (1) better understand the initial scope of work, (2) begin the process of identifying where new content was needed and where current content could remain, and (3) generate ideas to enhance both the impact and reach of the next version of the QIPS competencies.

Through the AAMC QIPS Competencies Renewal Survey, administered both to the advisory committee and subcommittee, contributors were able to review in-depth each section of the original QIPS competencies. Key questions from the survey included:

1. Describe your overall experience with the current AAMC QIPS Competencies. Have you used them? What, if any, feedback have you received?

2. What major advances in quality improvement, patient safety and potentially other domains (e.g. health systems science, population health, [diversity, equity, and inclusion]) should we consider as we look ahead to the renewal of the current competencies?

3. What are new desired competencies in QIPS/related areas for learners and faculty that we should keep in mind as we approach this work?

4. How might we incorporate these advances/updates into the next version of the competencies?

5. Which domains are missing or still needed?

6. Which domains from the current competencies should be omitted?

7. The initial AAMC QIPS competencies were delivered in a report format. What worked well about this format? What could be improved?

8. What should the updated final product look like? What do you believe our constituents need?

9. Is the current name (AAMC QIPS Competencies) effective? Describe the rationale for your answer and please share any suggestions you may have.

Additionally, for each domain of the original competencies, contributors answered specific questions addressing the importance, comprehensiveness, granularity, and relevance of each denoted competency. The data collected from this survey were then reviewed and analyzed for application to the updated competencies.

Literature Reviews and Revisions to the Competencies

Through the AAMC Reference Center, a comprehensive literature review was resourced for each anticipated and established domain, with the goal of reflecting current themes and priorities across core domains of QIPS, health systems science, current priorities, and emerging priorities. These literature reviews were critical in discerning which domains and competencies should be included in the revised version, and ensuring the integrity and quality of the updated report. The process of drafting the new competencies included multiple, iterative cycles of revision (i.e., drafting, revising, and finalizing content) and incorporating feedback from the QIPS subcommittee to best reflect emerging priorities in both QIPS and competency-based education. Our goal was to enable a rigorous and inclusive process in all aspects of this work.

Stakeholder Feedback

Once the first draft of the updated competencies was complete, there was an open period for public review and comment, and thereafter, the competencies were updated to reflect this input. Additionally, during the early phase of content development, an AAMC "table topics" session was presented at Learn Serve Lead 2022: The AAMC Annual Meeting, where learners, trainees, and numerous affinity and constituent groups were invited to provide feedback, including both affinity and specialty groups, as well as all AAMC constituents.

For more details related to the development of the initial competencies, please refer to the 2019 edition of *Quality Improvement and Patient Safety Competencies Across the Learning Continuum*.[1]

Appendix B. Glossary

anticipatory guidance: "Information about normal expectations of an age group (or of a disease) to provide support for coping with problems before they arise. It is a component of many health care encounters, e.g., well-child checkups in infancy."[7]

care plan: "A written, personalised care plan, which, under the single-assessment process, details a patient's integrated health and social care needs."[7]

competency-based medical education: "An outcomes-based approach to the design, implementation, assessment, and evaluation of medical education programs, using an organizing framework of competencies."[8]

consensus: "Middle ground, between total assent and total disagreement."[9]

experienced faculty physician: A medical doctor who has completed medical school (MD or DO) and residency, has completed at least three years of independent practice, and teaches or supervises learners, either paid or volunteer, full- or part-time.

explicit bias: "The traditional conceptualization of bias. With explicit bias, individuals are aware of their prejudices and attitudes toward certain groups. Positive or negative preferences for a particular group are conscious."[10]

handoff or handover: "The passing of the care of one or more patients to the doctors and nurses working on the next shift, by informing them of tests ordered, management issues and evolving or resolving problems."[7]

health care professional: An individual who functions as a multidisciplinary team member responsible for the delivery of health care services for patients.

health equity in QIPS: The provision of high-quality, safe care to attain the highest level of health for all people.

high-value care: "The best care for the patient, with the optimal result for the circumstances, delivered at the right price."[11]

implicit bias: "[Also known as unconscious bias,] refers to attitudes or stereotypes that are outside our awareness and affect our understanding, our interactions, and our decisions."[12]

informed consent: "Permission obtained from a patient to perform a specific test or procedure. Informed consent is required before most invasive procedures are performed and before a patient is admitted to a research study."[13]

Association of
American Medical Colleges

just culture: "A culture in which frontline personnel feel comfortable disclosing medical errors — including their own — while maintaining professional accountability. A just culture recognizes that competent professionals make mistakes."[14]

learning health system: "A health system in which internal data and experience are systematically integrated with external evidence, ..."[15] with application of that knowledge to drive excellence and improvement in practice.

medical error: "An act of commission (doing something wrong) or omission (failing to do the right thing) that leads to an undesirable outcome or significant potential for such an outcome."[14]

near miss: "An event or situation that did not produce patient injury, but only because of chance. This good fortune might reflect robustness of the patient ... or a fortuitous, timely intervention. ..."[14]

patient safety: The practices that reduce the occurrence of preventable adverse events and medical errors.

patient safety event or adverse event: "An injury caused by medical care."[14]

patients and caregivers as QIPS partners: Engagements with patients and caregivers based on respect, dignity, information sharing, participation, and collaboration in the pursuit of quality improvement and patient safety.

Plan-Do-Study-Act (PDSA): "The cycle of activities advocated for achieving process or system improvement."[14] The components of the cycle include: Plan, Do, Study, and Act.

quality improvement: The systematic ongoing practices that lead to measurable improvement in health care services and patient outcomes.

role model: "One who serves as an example for others by demonstrating the behavior associated with a particular social position or profession."[13]

run chart: "A type of statistical process control or quality control graph in which some observation ... is plotted over time to see if there are 'runs' of points above or below a center line, usually representing the average or median. In addition to the number of runs, the length of the runs conveys important information. ... If a non-random change for the better, or shift, occurs, it suggests that an intervention has succeeded."[14]

shared decision-making: "A process in which clinicians and patients work together to make decisions and select tests, treatments, and care plans based on clinical evidence that balances risks and expected outcomes with patient preferences and values."[16]

social risk factors: "A set of constructs that capture the key ways in which social processes and social relationships could influence key health-related outcomes. The five domains of social risk factors are socioeconomic position; … race, ethnicity, and cultural context; gender; social relationships; and residential and community context."[17]

teamwork, collaboration, and coordination: The knowledge, methods, and skills needed to interact and coordinate effectively in health care settings and to deliver clear information for improved patient outcomes.

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